



## MAINE STEP-UP PROGRAM AGREEMENT

### Leadership Track

### Fairchild Semiconductor Corporation

#### PURPOSE

The greatest challenge of the 21<sup>st</sup> century will be using earth's resources in sustainable ways to meet human needs. Through its own natural cycles, the earth provides clean water and air, fertile soils, and a myriad of plants and animals, all of which are essential to sustain life. We must find ways of producing products and providing services that model nature's cyclical design and sustain its productive capacities. In fact, where we can we must restore those capacities diminished by past misuse.

Environmental regulatory programs of the last 30 years have done much to clean and protect our waters, air and land. Now, new approaches to environmental protection are needed if continuous improvements are to be realized.

The Maine Department of Environmental Protection and Fairchild Semiconductor have agreed to explore new ways of protecting the environment that go beyond regulatory compliance. Fairchild Semiconductor commits to continuously improve its business practices to protect people and the environment. Fairchild Semiconductor will publicly report on its progress to inspire other businesses to seek improvement in their own environmental performance.

The Maine Department of Environmental Protection commits to vigorously assist Fairchild Semiconductor on its "climb up the mountain"—accepting the challenge—to find environmentally sustainable ways of doing business. The Goals Toward Sustainability set forth in Section 2. B. in this agreement are for the "Pathways" described in the "Climbing the Mountain" diagram found in the Department's A Guide for Your Business: Smart Production and the Maine Step-Up Program.

## 1. INTRODUCTION

Fairchild Semiconductor Corporation (Fairchild) at 333 Western Avenue, South Portland, Maine, produces building block semiconductors for multiple end markets. Fairchild products are designed into a wide variety of electronic systems serving the computing, Internet hardware, telecommunications, consumer, industrial and automotive markets.

Fairchild commits to the Maine Department of Environmental Protection (Maine DEP) to strive toward sustainability goals for its business with the assistance of the Maine DEP. Maine DEP will provide guidance and technical assistance related to Fairchild's goals and recognition for achievements made by Fairchild under this Step-Up Program Agreement. The Maine DEP will assign a senior Maine DEP staff person as a contact for Fairchild to work with during the design and implementation of the agreement. Fairchild will assign the Environmental Manager as the primary contact during the term of the agreement with the Facilities Engineer as the alternate contact.

## 2. PERFORMANCE COMMITMENTS

### A. Environmental Business Practices

- **Compliance Status** – Fairchild is in compliance with the Air Emissions License that it holds from the Maine DEP, the Industrial User Wastewater Discharge Permit that it holds from the City of South Portland, and the NPDES Storm Water Multi-Sector Permit that it holds from the USEPA. Fairchild has also completed all required environmental regulatory reporting to date and has paid all fees assessed.
- **Environmental Management System (EMS) Pathway To Sustainability** -- Fairchild has completed a registration audit for an ISO 14001 (EMS) and has been recommended by the auditor, Underwriters Laboratory, for registration. As part of Fairchild's EMS program, an EMS Manual was developed that outlines how Fairchild will address all of the seventeen requirements of the ISO 14001 Standard. Included in the Manual are items closely related to the Step-Up Program, such as Legal and Other Requirements, Objectives and Targets, Training and Awareness, Communications, Monitoring and Measurement. Fairchild expects that its EMS and participation in the Maine Step-Up Program will help the company to achieve similar goals.
- **Workers and Community Pathway To Sustainability** – Fairchild has established a well-organized employee training program. All employees have an understanding of the EMS, and there is a means for all employees to communicate environmental concerns and ideas to the management of the plant. Employees have been notified by e-mail, postings on bulletin boards and Focus News (TV) of Fairchild's environmental goals, targets and objectives. Periodically, results are communicated concerning the progress in achieving those goals, targets and objectives. Fairchild also communicates regularly with

its other plants about similar environmental issues in order to share successes that may be employed at other plants. Fairchild plans to work with other facilities in Maine to share much of the experience gained through the development of its EMS program. Fairchild will also establish a public advisory committee to serve as a forum to discuss Fairchild's progress towards its goals under this Step-Up Program agreement. Fairchild will meet with this group periodically to inform them of its efforts to achieve environmental sustainability by reducing pollutants and increasing energy efficiency and to solicit their input.

## **B. Goals Toward Sustainability**

For past 10 years, Fairchild has been working to reduce energy consumption and has achieved good results. The company has upgraded the entire site's lighting and installed motion detectors for lighting, high efficiency motors, variable frequency drives and winter free cooling heat exchangers, which take advantage of winter temperatures for cooling facilities rather than rely on mechanical systems. New processes to be employed in making semiconductor products will actually increase energy consumption in the near term. Therefore, establishing a goal of reducing energy use at this time is not feasible. However, the company will continue to explore ways to improve energy efficiency throughout its operations.

Focused goals for the three-year agreement will be in the areas of reducing use of chemicals and water, and reducing air emissions, hazardous waste, and wastewater. Fairchild's Corporate Environmental Health and Safety Policy states that the company is "actively pursuing pollution prevention measures that reduce environmental impacts and conserve natural resources through process improvement, recycling, and other actions." Goals toward sustainability set by Fairchild take into account the following criteria:

- The site's significant aspects as identified in Fairchild's EMS program ISO 14001 Standard
- Regulatory issues
- Financial considerations
- Business considerations
- Technological feasibility
- Views of interested parties

Specific goals toward sustainability for 2002 include:

- **Environmental Management System (EMS) Pathway To Sustainability --** Fairchild is registered under the ISO 14001 Standard by its third party auditor, Underwriters Laboratory. Fairchild will continue to use third party auditors to maintain its registration with ISO 14001 and will continue to do internal audits as well to meet the requirements of the ISO 14001 Standard. Fairchild expects an audit will find that the company is meeting at least 88% of the requirements in its EMS Program, which is based on the ISO 14001 standards. (The ISO 14001

standards have 17 elements that cover, for example, environmental policy, defining environmental aspects, meeting all legal and other requirements, etc.) (This level of compliance is believed to be achievable based on experience with audits conducted under ISO 9000 and QS 9000). A graphical presentation of internal audit results is presented in an attachment titled "EMS Internal Audits, FME – P2 '02.

- **Water Input, Water Discharge and Toxics Reduction Pathways To Sustainability** -- Reduce the following usage and waste per manufacturing unit. -- (A manufacturing unit is referred to as a mask move-see section C for definition.) Reductions will be from a forecasted 2002 baseline. (2001 was not a typical year in terms of production, so 2002 will be used as a baseline) (see attachments):

<u>Usage / Waste</u>	<u>Total reduction from forecasted 2002 baseline for 2<sup>nd</sup> half CY'02</u>
Chemical Usage	6%
Hazardous Waste	5%
Wastewater	2%
Water Usage	4%

The following is a goal for 2002 that will provide the required data to set 2003 and 2004 goals:

By December 2002, research feasibility to update present wet chemistry technology with latest tooling and techniques to minimize use of chemicals. Newly developing wet chemistry wafer fabrication tools for the semiconductor industry appear to be able to reduce chemical usage by 50% or greater. Chemicals targeted at this time are sulfuric acid, hydrochloric acid, ammonium hydroxide, magnesium hydroxide, nitric acid, and hydrogen peroxide. Hydrofluoric acid would increase in usage (the new process substitutes small amounts of hydrofluoric acid in place of much larger amounts of the other chemicals).

New goals will be established for calendar years 2003 and 2004 in January 2003 for reducing usage and waste per manufacturing unit. These goals will be based on the results of the research into the feasibility of updating the present wet chemistry technology. If it proves feasible to update the wet chemistry technology with the latest tooling and techniques, then new goals will be established for reductions based on these systems. If it does not prove feasible to adopt the new technology, then new goals will be established based on those systems currently in use in January 2003.

- **Air Emissions Pathway To Sustainability** -- By December 2002, identify engineering solutions and research feasibility to minimize air effluent

discharges. This project will identify cost effective abatement technology for the following hazardous air pollutants:

- Nitric Acid (a component of Aqua Regia)
- Hydrides (Arsine & Phosphine)
- PFC's (SF6, CF4, C2F6)
- VOC's (volatile organic compounds)

and develop a proposed funding plan for 2003 & 2004 that will move Fairchild significantly closer to a long term desired state of "zero discharge" (see attached schedule).

### **C. Measurement Methods**

Fairchild manufactures integrated circuits for the world market. That manufacturing process consists of building multiple layers of microscopic electrical circuits on a thin circular silicon disk called a "wafer". The central process is called "Photolithography" which exposes the proper circuit pattern from a template called a "mask". To complete a wafer it may need to run through the mask step from 7 to 26 times. These mask steps are referred to as "mask moves" in the industry. To effectively compare (normalize) productivity, product yield, cost efficiency, etc., between manufacturers, these items are calculated as a rate (i.e., \$ per manufacturing unit).

The manufacturing of each wafer will require the use of chemicals, water, energy, labor, etc. and generate certain wastes. In keeping with the industry standards that will allow Fairchild to make effective comparisons, Fairchild has calculated its usage and waste as a rate, using mask moves (mm) as the base-manufacturing unit. The following usages and wastes will be measured as:

- |                   |                                 |
|-------------------|---------------------------------|
| • Chemical Usage  | lbs./mm (pounds per mask move)  |
| • Hazardous Waste | lbs./mm (pounds per mask move)  |
| • Water Usage     | gals/mm (gallons per mask move) |
| • Wastewater      | gals/mm (gallons per mask move) |

Goals that require engineering and feasibility studies will be set up as projects with Gantt Chart schedules.

### **D. Public Involvement**

Fairchild commits to establish a public advisory committee comprised of local and statewide leaders. Fairchild will meet with this group periodically to inform them of its efforts to achieve environmental sustainability by reducing pollutants and increasing energy efficiency and to solicit their input. Fairchild will involve the Maine DEP in all meetings.

## **E. Mentoring**

Fairchild has developed an EMS and has recently received recommendation for ISO 14001 Registration. This process requires an extremely significant commitment from a company to be successful. Fairchild has been working toward this for nearly three years and has invested nearly 10,000 person hours to develop its EMS program. Fairchild has already seen benefits in the improved awareness, interest, and attitude of its employees regarding their jobs and how they might contribute to reducing impacts on the environment.

Fairchild wants to share its knowledge and experience with other Maine businesses that are interested in developing their own EMS Program. Fairchild will seek out at least one Maine business willing to make the proper commitment and assist them with the development and implementation of their EMS up to ISO 14001 Registration and/or membership in the Maine Step-Up Program. Fairchild will make its EMS staff and site available to the selected company for:

- Review of Fairchild's EMS program
- Tour of Fairchild's site relative to EMS
- Attendance at Fairchild's ISO 14001 re-registration audits
- Assistance in establishing the mentored company's EMS

In addition to the above intensive commitment, Fairchild will discuss the merits of an EMS program with any interested party.

## **F. Relationship**

To develop and maintain a constructive, cooperative, mutually beneficial, long-term relationship, Fairchild will work closely with the Maine DEP to:

- set and achieve goals toward sustainability as outlined in Section B
- identify and review existing and proposed regulatory issues that would impede or enhance Fairchild's ability to achieve the goals toward sustainability while meeting fundamental business requirements such as profitability, etc.
- meet biannually with a Public Advisory Committee to review progress toward goals and adjust as necessary
- exchange issues, ideas, and solutions with other Step-Up Program members through periodic meetings
- encourage other Maine businesses to develop their own EMS programs
- remedy any non-compliance issues identified during Maine DEP compliance inspections or audits within acceptable time frames

The Maine DEP will work closely with Fairchild to:

- provide a single, dedicated DEP Step-Up Program contact
- make DEP staff available to Fairchild for technical and regulatory assistance. This assistance will be provided consistent with existing State law and agency

policy. Maine DEP expects to forego civil penalties for certain types of first-time violations discovered in the process of providing assistance or disclosed as a result of compliance audits performed by Fairchild when Fairchild corrects the non-compliant condition within the shortest practicable time period, and in all cases, within the correction periods established in Maine DEP's Small Business Compliance Incentives Policy, Section II (as amended February 14, 1996) and its Supplemental Environmental Projects Policy, Section V (as amended June 15, 2000). Violations excluded from this provision are those listed in Maine DEP's Small Business Compliance Incentives Policy, Section III (as amended February 14, 1996) and its Supplemental Environmental Projects Policy, Section V (as amended June 15, 2000). Regular or necessary compliance inspections performed as part of day-to-day business at Maine DEP are not subject to these provisions.

- provide one media compliance inspection/technical assistance visit from at least one media program each year during the three-year term of the agreement
- explore with the USEPA placing Fairchild on the USEPA's low priority list for inspections
- coordinate periodic meetings with other Step-Up Program members to discuss environmental issues, exchange ideas, and explore solutions to environmental challenges
- discuss with Fairchild any issue or upcoming state legislation, which the Department is aware of, that may affect Fairchild's ability to function
- explore the feasibility of electronic reporting for any annual required reporting
- work with Fairchild to obtain any available grant money to evaluate new emissions control equipment that has potential for reducing emissions from Fairchild

### **G. Recognition**

Maine DEP will recognize Fairchild's participation in the Step-Up Program by including specific information on the *Smart Production/Step-Up Web Page* maintained by the State, and in press releases from time-to-time to keep the general public informed of Fairchild's status in the Step-Up Program. Fairchild will also receive a Governor's Award for Environmental Excellence without the need for application when any *Goal Toward Sustainability* detailed in this agreement is achieved. All outside recognition and communications shall be mutually agreed upon prior to release to the public.

### **3. REPORTING**

Fairchild will provide biannual progress reports to the Maine DEP and Public Advisory Committee which will include the following:

- accomplishments toward goals as outlined in Section B
- identification of any need to adjust goals with recommendation of new goals
- summary of status of corrective action plans generated from audits or inspections

- ISO 14001 Registration status
- progress of Mentoring Program
- recommendations of any proposed changes to this agreement
- Toxic Use Reduction Act (TURA) updates

In addition Fairchild will post summary updates on its web site at [www.fairchildsemi.com](http://www.fairchildsemi.com).

#### **4. TERMINATION**

Either party to this Agreement may terminate the participation of Fairchild in the Step-Up Program with 30-days notice to the other party.

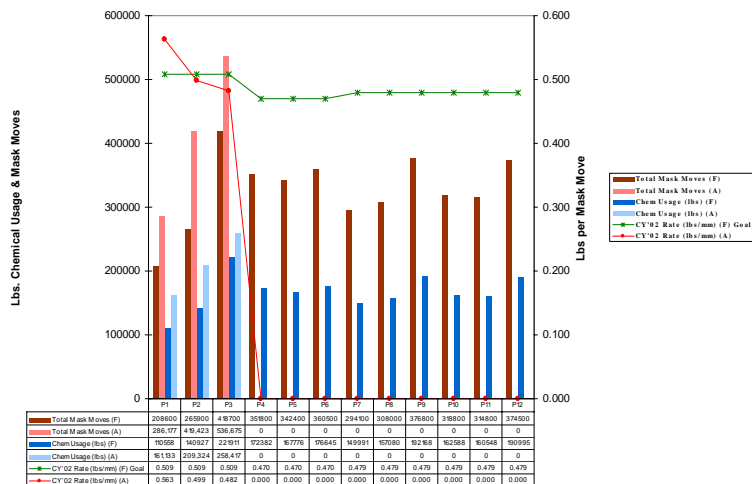
WITNESS here today, July 22, 2002, that the undersigned parties enter into this agreement.

\_\_\_\_\_  
Angus S. King, Jr., Governor State of Maine

\_\_\_\_\_  
Douglas Wilson, Managing Director of South Portland  
Plant, Fairchild Semiconductor



# EMS - Chemical Usage



## Opportunities

		EKC 265	1.34%
BOE6:1	2%	Ammonium Hydroxide	1.42%
Hydrogen Peroxide	12.91%	PRS 1000	2.45%
Nano Strip 2x	4.09%	Isopropyl Alcohol	4.08%
Sulfuric (96%) Acid	8.19%	RER 600	3.04%
Developers (TMAH)	9.18%	Nitric Acid	1.44%
Phosphoric Acid	5.09%	Xylenes	1.24%
Hydrochloric Acid	3.28%	Sulfuric Acid (93%)	1.19%
Hydrofluoric Acid	3%	Magnesium Hydroxide	21.24%
Sodium Hydroxide (50%)	3.92%	Others	10.98%

## Based on 2001 Figures

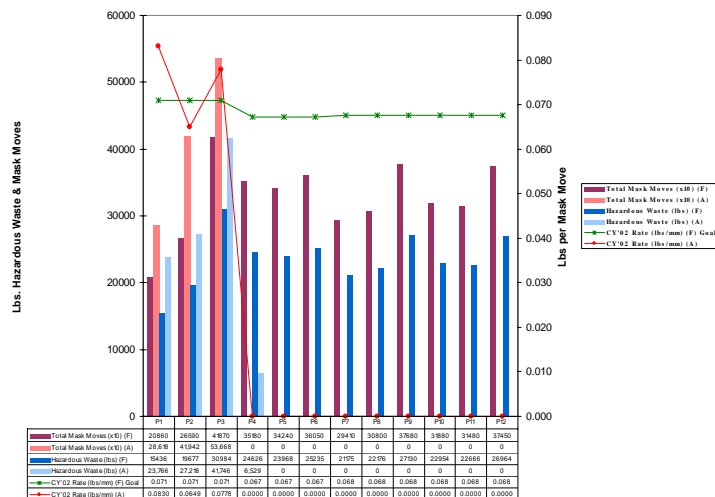
Objective:				
Rate	Q1'02	Q2'02	Q3'02	Q4'02
Forecast (lbs / mm)	0.509	0.47	0.479	0.479
Actual (lbs / mm) (CUM)	0.506			

Reduce Chemical usage per mfg. unit 1<sup>st</sup> ½ of FY'02 by 4%, 2<sup>nd</sup> ½ FY'02 by 6%

## Chemical Usage Targets

Projects:			
What	Who	When	Comments
Lower Bath Temps	S.Scontras	P3'02	CL100 RCA From 70° to 50°
Extend Bath LifeBOE	S.Scontras	P4'02	19,800 lbs / yr BOE & Mag
Hydro Zone Wet Deck	S.Scontras	P7'02	190,000 lbs / yr . Sulfuric & Mag
Extended Bath Life Nano Strip	S.Scontras	P7'02	42,300 lbs / yr Nano & Mag
Leaching Reduction (RCA)	S.Scontras	Q4'02	1300 gal/yr
Pre-Diffusion clean reduced chemistry evaluation	S.Scontras	Q4'02	J.T.Baker Evaluation
SOG Reduction via Automation	S.Scontras	FY'02	Pending Capital funding

# EMS - Hazardous Waste



## Opportunities:

- Waste Solvents except IPA 18%
- Waste IPA 13%
- Waste EKC 3%
- Recovered PRS1000 7%
- Waste Fluorides 56%
- All Other Wastes 9%

Based on 2001 Waste Summary  
Does not include process wastewater

Objective:				
Rate	Q1'02	Q2'02	Q3'02	Q4'02
Forecast (lbs / mm)	0.0718	0.0679	0.0684	0.0684
Actual (lbs / mm) (CUM)	0.0746			

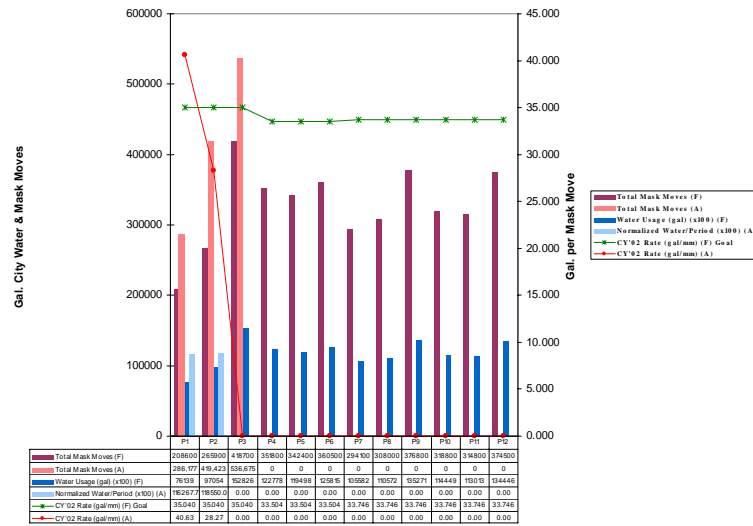
Reduce Hazardous waste per mfg. unit 1<sup>st</sup> ½ of FY'02 by 3%, 2<sup>nd</sup> ½ FY'02 by 5%

## Hazardous Waste Targets

Projects:

What	Who	When	Comments
Resist Reduction - FSI	S.Scontras	P4'02	480 lbs / 100k 6" equivalent starts
SOG Reduction via Automation	S.Scontras	FY'02	TBD

# EMS - Water Usage



## DI Water Usage P3 Fy'02

•DI Water Make Up (77% of C.W. usage)	M Gal	%
HP-1 (class 100)	1.99	27.1
HP-2 (class100)	1.87	25.4
Build. 17 (class 1)	2.08	28.3
CMOS (class 1)	0.74	10.0
EPI (class 100)	0.21	2.9
Parts Clean	0.26	3.5
Build. 10 (F/A & REL)	0.07	0.9
Chem. Mix	0.01	0.1

Objective:				
Rate	Q1'02	Q2'02	Q3'02	Q4'02
Forecast (gal / mm)	35.77	34.20	35.18	35.18
Actual (gal / mm) (CUM)	30.94			

Reduce Water usage per mfg. unit 1<sup>st</sup> ½ of FY'02 by 2%, 2<sup>nd</sup> ½ FY'02 by 4%

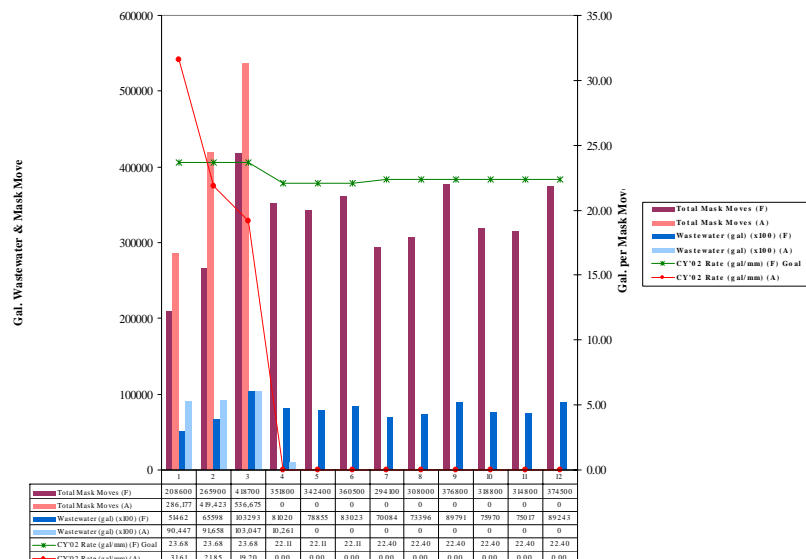
Water usage totals are a period behind do to timing of invoicing

## Water Savings Targets

What	Who	When	Water Type	GPM	MGAL/ YR
Bldg. 17 Vac Pumps on PCW	J.Rouillard	Q3'02	City	8	4.2
Bldg. 2 Hi Vac Pumps on PCW	C.Dillman	Q3'02	City	8	4.2
UV Fusion / Ozones on PCW	C.Dillman	Note	DI	20	10.5

Note: Dependent on occupying Building 17A

# EMS - Wastewater Discharge



## DI Water Usage P3 Fy'02

•DI Water Make Up (77% of C.W. usage)	M Gal	%
HP-1 (class 100)	1.99	27.1
HP-2 (class100)	1.87	25.4
Build. 17 (class 1)	2.08	28.3
CMOS (class 1)	0.74	10.0
EPI (class 100)	0.21	2.9
Parts Clean	0.26	3.5
Build. 10 (F/A & REL)	0.07	0.9
Chem. Mix	0.01	0.1

Objective:				
Rate	Q1'02	Q2'02	Q3'02	Q4'02
Forecast (gal / mm)	24.18	22.57	22.88	22.88
Actual (gal / mm) (CUM)	22.95			

Reduce Wastewater per mfg. unit 1<sup>st</sup> ½ of FY'02 by 2%, 2<sup>nd</sup> ½ FY'02 by 2%

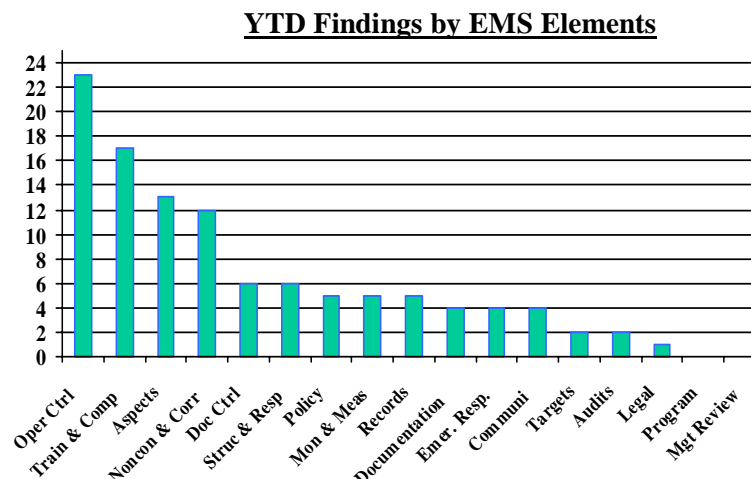
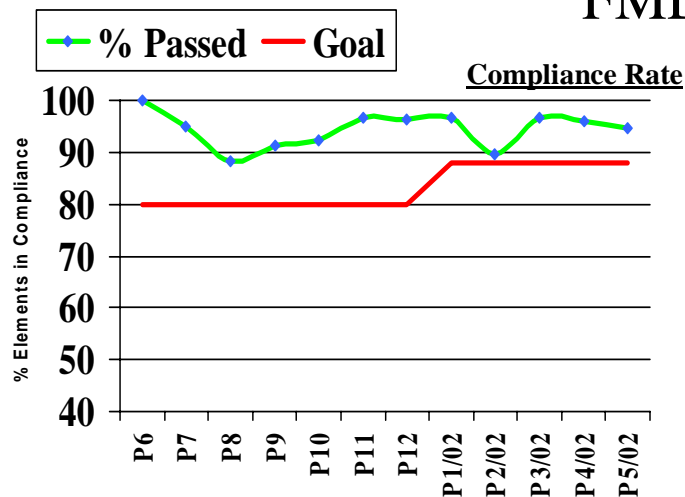
## Wastewater Targets

What	Who	When	Water Type	GPM	MGAL/ YR
Bldg. 17 Vac Pumps on PCW	J.Rouillard	Q3'02	City	8	4.2
Bldg. 2 Hi Vac Pumps on PCW	C.Dillman	Q3'02	City	8	4.2
UV Fusion / Ozones on PCW	C.Dillman	Note	DI	20	10.5

Note: Dependent on occupying Building 17A

# EMS Internal Audits

## FME - P5 '02



### Strategy/Tactics/Improvement Plans

What	Who	When
Implement corrective actions for UL Cert Audit Action Items: JS 5.	M.Vail D.Russell	End of P6
Implement corrective actions for UL Cert Audit Action Items: JS1.	M.Reilly A.Ahlers	End of P9
Complete re-audit review of ISO14001 system audit corrective actions	A.Costigan C.Dillman M.Reilly	WW 04 WW 05 WW 35

Definition: # Checklist Items Passed / # Checklist Items Audited

### Top 10 Findings by Period

	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15
Policy	0	1	1	2				2		
Aspects	0	4	7							2
Legal	0									1
Obj. & Targets	0	1	1							
EMS Program	0									
Structure & Resp.	0	4			1					1
Training	0	4	1	6			3		2	1
Communication	0				3					1
Documentation	0			1	3					
Doc Ctrl	0	1	2	1	2					
Operational Ctrl	0	1	14	3		1			1	3
Emergency Resp.	0				3					1
Monitor & Meas.	0	1		1		2			1	
Nonconform	0	1	2	7			2			
Records	0						3		2	
Audits	0						2			
Management Rev.	0									